

4/3/2018

Print



Dart Hawkesbury
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada
Tel (613) 632-5200

Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Tot.
PO039449	ACI001-VC	4	1	Net 30	MT-4140-R4.000	AISI 4140 Round Bar				2	4/6/2018	2		S057702	Stock	4/3/2018	\$ 105.09 / ft	0		\$25.
Total:										2		2								\$195

Plex 4/3/2018 11:20 AM Dart Dubois Pascal



DELIVERY - CLIENT

Copy CO00081197

ACIER OUELLETTE INC.
935, Boul. du Hâvre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Billed to
DART AEROSPACE LTD

1270, ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Customer N° CL10001056
Date 2018/03/29
Delivery date 2018/04/03
Your order N° 039449
Processed by Josianne Bourdon
Salesman
Carrier OUELLETTE VALLEYFIELD
Credit Terme Net 30 Days
Page 1

Product Description	Weight	Qty	U/M	PCS NB			Internal Use Only				
				CMD	EXP	B/O	IN	I	S	C	OUT
1 ROUND 4140 HEAT TREAT 4 (R) R4140-4H 4965 4 X 7" LINE 4 HEAT: 12080470 COUPE A LA SCIE SCIE 1	110.17	2.50	PL_\$CLB		4x 7"		4 PCS 4/27/1 2.4		DAS 11 9-89		APR 03 2018

Total Weight (lbs) : 110.17

NIR : R-109516-6

Conditions :
All sold and delivered materials remain the property of "Acier Ouellette Inc." until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acier Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

Prepared By :

Verified By :

Delivered By :

Time

Total (\$CAD)

Customer's Signature

Date

Eaton Steel Bar Company Inspection Certificate 1701209

EN 10204:2004-3.1

Customer	BOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	225539	19-Feb-2018	B40059	8556 rev 008	013733	4 HR RD 4140TKR 21/24H SBQ QTSE VD C8-AL-FG MST

All bundles listed below were produced using steel from Heat 12090470 issued by GERDAU-BRAZIL and were completed from Eaton Steel Job 823764.

Chemistry	Description	Value	Units	Jominy	Description	Value	Units
C	Carbon	0.41000	PMGT	J30	30/16 inch from Quenched End	42	HRC
Mn	Manganese	0.94000	PMGT	J32	32/16 inch from Quenched End	42	HRC
P	Phosphorus	0.01400	PMGT	Mechanical			
S	Sulfur	0.01400	PMGT	TENSILE PSI	Tensile Strength in PSI Units	153100	PSI
Si	Silicon	0.29000	PMGT	YIELD PSI	Yield Strength in PSI Units	134400	PSI
Ni	Nickel	0.09000	PMGT	ELONGATION	Percent Elongation in Area	19.00	PCT
Cr	Chromium	1.04000	PMGT	REDUCTION	Percent Reduction in Area	55.0	PCT
Mo	Molybdenum	0.24000	PMGT	BRINELL SURF	Brinell Surface	313.0	BHN
Al	Aluminum	0.01700	PMGT	Heat Treating	Description		
Cu	Copper	0.18000	PMGT	TEMPER TEMP F	Temper Temp in Fahrenheit	500 - 2500	DEGF
V	Vanadium	0.00400	PMGT	AUSTEN TEMP F	Austenitize Temp in Fahrenheit	1600 - 1700	DEGF
Cb	Columbium	0.00400	PMGT	SR TEMP F	Stress Relief Temp in Fahrenheit	500 - 2500	DEGF
N	Nitrogen	0.00570	PMGT	MAGNETISM-HT	Magnetism in Gauss	0 - 20	GN
DI	Ideal Diameter	6.62910	IN	TIME AT TEMP	Time at Temperature		
Cleanliness	Description	Value	Units	QUENCH MEDIA	Quench Media Requirements	P&W/O	
SAE J422 OX	SAE J422 Oxide Rating	0.0 - 5.0	NUM	STRESS FREE	Cert stress free	CERTIFIED	
SAE J422 SI	SAE J422 Silicate Rating	0.0 - 5.0	NUM	HT1410-42QT	Quench & Temper	CONFORMS	
MACRO ETCH	Report macro etch results.			Mill Processing	Description		
Geometry	Description	Value	Units	MELT COUNTRY	Melted in Country	Value	Units
DIAMETER	Diameter	4.0000 - 4.0625	IN	ROLLED COUNTRY	Rolled in Country	BRA	
Jominy	Description	Value	Units	RED RATIO	Reduction Ratio	7.10	RED
J1	1/16 inch from Quenched End	59	HRC	ASTM Standard	Description	Value	Units
J2	2/16 inch from Quenched End	59	HRC	A193/193M-01	Grade B7	CONFORMS	
J3	3/16 inch from Quenched End	58	HRC	A434-90a-BC	ASTMA BC Tensile and Yield properties	CONFORMS	
J4	4/16 inch from Quenched End	58	HRC	Structure	Description	Value	Units
J5	5/16 inch from Quenched End	58	HRC	PERCENT TM	Percent Tempered Martensite	80 - 100	PCT
J6	6/16 inch from Quenched End	57	HRC	MICROSTRUCTURE	Reported Microstructure	TM	
J7	7/16 inch from Quenched End	57	HRC	Tag Number	Qty Units	Length	
J8	8/16 inch from Quenched End	57	HRC	022-2203726	8858 LBS	22ft10in/21ft10in	
J9	9/16 inch from Quenched End	56	HRC				
J10	10/16 inch from Quenched End	56	HRC				
J11	11/16 inch from Quenched End	55	HRC				
J12	12/16 inch from Quenched End	54	HRC				
J14	14/16 inch from Quenched End	52	HRC				
J16	16/16 inch from Quenched End	51	HRC				
J18	18/16 inch from Quenched End	49	HRC				
J20	20/16 inch from Quenched End	46	HRC				
J22	22/16 inch from Quenched End	43	HRC				
J24	24/16 inch from Quenched End	43	HRC				
J26	26/16 inch from Quenched End	42	HRC				
J28	28/16 inch from Quenched End	42	HRC				

Bundle tags with Eaton Steel identifies reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM-00002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.

Created on 19-Feb-2018
 Marc Benjamin, Corporate Metallurgist
 This document was prepared by means of electronic data processing and is valid without signature.

10221 Capital Avenue, Oak Park, MI 48237 USA
 Tel: 248-388-3434
 Fax: 248-388-1434
 http://www.eatonsteel.com

PAR E-MAIL LE 02 AVR. 2018



PART NUMBER 8168	PESO/WEIGHT (KG) 40.553,000	MATERIAL/MATERIAL 705013345	PRODUTO/PRODUCT HOT ROLLED ROUND BAR	Cert. N° 0000022442
CLIENTE/CLIENT EATON STEEL BAR COMPANY		QUALIDADE/GRADE 4140TER	NO HEAT TREATMENT AS ROLLED	CORRIDA/HEAT 12080470
NORMA/SPECIFICATION SPEC FOR ITEM 8168 006 23.01.2014			BITOLA/SIZE 101,60 mm	

OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / TS 16949 / ISO 14001

Nota Fiscal/Invoice	Pedido/Cust.Order	Ord-Fornec/Ord-Supply	Lote/Batch	Peso/Weight (kg)
0000017226	162566	5336580 - 8108897269	1208047006	22.523,000
0000017311	162566	5336580 - 8108972888	1208047006	13.530,000
0000017692	162566	5336580 - 8109066468	1208047007	4.500,000

ANÁLISE QUÍMICA/CHEMICAL COMPOSITION

C	Mn	Si	P	S	Cr	Ni	Mo	V	Cu	Sn	Al	Ti	Nb	N	B	Pb
0,410	0,94	0,29	0,014	0,014	1,04	0,09	0,24	0,0040	0,180	0,0130	0,0170	0,0010	0,0040	0,0057	0,0002	0,0010
H	Ca	AS	Sb	DI												
1,00	0,0008	0,0030	0,0020	6,6291												

ENSAIOS MECÂNICOS/MECHANICAL PROP

Hardness	HB
	306,00

ENSAIOS METALOGRAFICOS/METALLOGRAPHIC TESTS

Austenitic Grain Size	
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MICROINCLUSÕES/INCLUSION RATING NUMBER

ASTM/SAE	A - TS	A - HS	B - TS	B - HS	C - TS	C - HS	D - TS	D - HS
REGULAR	1,5	1,0	0,0	1,5	0,0	0,0	1,0	0,0
SAE								
REGULAR								

MACROGRAFIA/MACROGRAPHY

Blue Fracture (H)	
1	



OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / TS 16949 / ISO 14001

PART NUMBER		PESO/WEIGHT (KG)		OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO9001 / TS16949 / ISO14001										HOT ROLLED ROUND BAR		0000022442																	
8168		40.553,000		MATERIAL/MATERIAL										NO HEAT TREATMENT		CORRIDA/HEAT																	
CLIENTE/CLIENT				705013345										AS ROLLED		12080470																	
EATON STEEL BAR COMPANY				QUALIDADE/GRADE																													
				4140TR																													
TEMPERABILIDADE/HARDENABILITY																																	
1/16"		2/16"		3/16"		4/16"		5/16"		6/16"		7/16"		8/16"		9/16"		10/16"		11/16"		12/16"		14/16"		16/16"		18/16"		20/16"		22/16"	
HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC	
59,5		59,1		58,8		58,2		58,0		57,8		57,5		57,0		56,5		56,0		55,6		54,0		52,5		51,3		49,8		46,5		43,5	
24/16"		26/16"		28/16"		30/16"		32/16"																									
HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC		HRC			
43,3		42,8		42,7		42,5		42,0																									

OBSERVAÇÕES/OBSERVATIONS Meltsbop route: EAF, LF, VD, CC. Made in Brazil at Gerdau Charqueadas. Produced according to ASTM A304 and ASTM A322 Reduction Ratio: 7,1:1 Melted in Brazil Rolled in Brazil		DEPARTAMENTO DA QUALIDADE / QUALITY DEPARTMENT BR-ML-CHARQUEADAS-AFP. 20.09.2017	
ENVIRONMENTAL RECOMMENDATIONS RELATED TO PRODUCTS: In order to contribute with the environment and sustainable development of our productive chain, we recommend to our clients to dispose accordingly the waste related to our products, according to the environmental legislation of your region, state or country.		ANDRÉ L. SILVA FAGUNDES CREA 0682601000	

Lab Services Report



10221 Capital Avenue
Oak Park MI 48237
(248)543-3578 telephone
(248)398-1434 facsimile

Bill To: Apollo Heat Treating and
Processing Company, L.L.C.
10400 Capital Avenue
Oak Park, MI

Ship To: Apollo Heat Treating and
Processing Company, L.L.C.
10400 Capital Avenue
Oak Park, MI

Attn: Randy Call
rcall@apollohtr.com

Report Date: 12/20/2017

Report ID: 17-4982

Request ID:

This report contains results for the indicated services performed on the following sample(s):

Part No	8556	Finish	HR	Shape	Round	PO #:	823764
Size	4.000	Grade	4142	Work Order	823764		
Titan Sample ID	Heat	Customer Sample ID					
17-4982-1	12080470	823764 JOB 3173					

Steve Avery

Report Approved By: Steve Avery

Mechanical Testing

ASTM E8M-18a

ASTM E10-17

Sample ID	Ultimate Tensile, psi	0.2% Offset Yield, psi	Elongation - Manual, %	Reduction of Area, %	HBW Surface
17-4982-1	153,100	134,400	19	55	313

Test Comments

Mechanicals tested at Midradius



Certificate Number: 2007.01
Testing Laboratory

Any services within a section marked with * are not part of Titan Metallurgy's current A2LA accreditation.

All testing performed by Titan Metallurgy was done at ambient (room) temperature.

Report ID: 17-4982

Page 1 of 1



10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017
Certification Number: 17 - 0888
Customers Order Number: 823764
Part Number: 8168 - 8556
Heat Number: 12080470
Heat Treat Job Number: 3173

Material: 4140
Quantity: 84 Pcs.
Weight: 83,449 Lbs.
Description: 4.0000" Diameter x 23' 4" Length
Per Specification: ESHT HT4140 - 42QT

	Temperature	Time at Heat	Coolant
Normalized	N/A		
Preheat	N/A		
Austenitized/Hardened	1575 °F	1 Hour 30 Minutes	
Spray Quenched	98.1 °F - 104.9 °F	N/A	Water
Temper	1150 °F	2 Hours 35 Minutes	Air Cooled to Ambient
Temper	N/A		

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E.
We hereby certify the above material has been treated in the manner described are correct as
contained in the records of Apollo Heat Treating and Processing, LLC.



Randy L. Call
Plant Manager
Apollo Heat Treating & Processing, LLC



10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017
Certification Number: 17 - 0889
Customers Order Number: 823764
Part Number: 8168 - 8556
Heat Number: 12080470
Heat Treat Job Number: 3173

Material: 4140
Quantity: 91 Pcs.
Weight: 91,375 Lbs.
Description: 4.0000" Diameter x 23' 4" Length
Per Specification: ESHT HT4140 - 42QT

	Temperature	Time at Heat	Coolant
Normalized	N/A		
Preheat	N/A		
Austenitized/Hardened	1575 °F	1 Hour 30 Minutes	
Spray Quenched	98.1 °F - 104.9 °F	N/A	Water
Temper	1150 °F	2 Hours 35 Minutes	Air Cooled to Ambient
Temper	N/A		

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E.
We hereby certify the above material has been treated in the manner described are correct as
contained in the records of Apollo Heat Treating and Processing, LLC.



Randy L. Call
Plant Manager
Apollo Heat Treating & Processing, LLC



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO039449**

Supplier: ACI001-VC
Acier Ouellette Inc.
935 Boul. Du Havre
Valleyfield
QC
J6S 5L1 Canada
Phone: 800 667 4248
Fax: 450 377 5696

PO No: PO039449

PO Date: 3/28/18

Due Date: 4/6/18

Purchase Order
Revision:

Revision Date:

Ship-To Contact: Lavoie, Chantal
clavoie@dartaero.com

E-MAILED
MAR 29 2018

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments: QUOTE NO. SOU0094912

Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	MT-4140-S-2.750X5.000		4140 Steel Sheet 2.750 X 5.000 : MAT'L: AISI 4140 / 4142 STEEL SHEET OR PLATE MINIMUM ROCKWELL C = 28 Rc MAXIMUM ROCKWELL C = 32 Rc ASTM A829, AMS 6395 receive ft	Firmed	4/6/18	2.917 ft	0 ft	3 ft	\$142.62889/ft	\$416.05
Line Item Note 2 PCS CUT TO SIZE 17.500"										
2	MT-4140-B-1.000X1.000		4140 Steel Bar 1.000 X 1.000 : AISI 4140N STEEL BAR PER MIL-S-5626, AMS 6382, AMS 6349, AMS 6529 receive ft	Firmed	4/6/18	16 ft	0 ft	16 ft	\$23.0425/ft	\$368.68
3	MT-4140-R1.625		AISI 4140 Round Bar	Firmed	4/6/18	4 ft	0 ft	4 ft	\$39.25/ft	\$157.00
4	MT-4140-R4.000	CUT TO 7" LENGHT	AISI 4140 Round Bar	Firmed	4/6/18	2.33 ft	2.40 ft 4PCS	2 ft	\$105.09442/ft	\$244.87
Line Item Note 4 PCS CUT TO 7"										
									Grand Total: \$1,186.60	

Order Notes

DAS
11
9-89

APR 03 2018

Order Notes**Procurement Quality Clauses**

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)
A026 certification of material conformance
A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 3/28/18 1:37 PM dart.lavoie.chantal

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-4140-R4.000
DATE: APR 03 2018

PO / BATCH NO.: 039449/5057202

MATERIAL CERT REC'D: yes
QUANTITY RECEIVED: 2.2' 4Pcs
QUANTITY INSPECTED: 2.2' 4Pcs
QUANTITY REJECTED: 0

THICKNESS ORDERED: 4.000
THICKNESS RECEIVED: 4.000
SHEET SIZE ORDERED: N/A
SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL PER M-DRAWING	(Y) N	4140-42QT
CORRECT THICKNESS	(Y) N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	(Y) N	Heat # 12080470
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D	WEBSTER
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>DAS</u>	SIGNED OFF BY: _____		
DATE: <u>11 APR 03 2018</u>	DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR
SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT
PART NUMBER: MT-4140QT-R [D.DDD]
WHERE "D.DDD" = DIAMETER IN INCHES
EG. 5/8" ROUND BAR = MT-4140QT-R0.625

REV.	DESCRIPTION	DATE	BY	APPROVED
A	NEW ISSUE	17.09.12	VM	VM

DART AEROSPACE Hemelock, Ontario, Canada	
TITLE: AISI 4140 Q&T ROUND BAR	
DWG NO.	REV
MT-4140QT-R	A
DESIGN BY: VM 8/9/2017	DATE: 8/9/2017
DRAWN BY: VM 09/14/2017	CHECKED: VM 09/14/2017
QC APPR: VM 09/14/2017	DATE: 9/14/2017
1. DIMENSIONS ARE IN INCHES 2. INTERPRET DIM AND TOL PER 3. ASME Y14.5M-2009 4. ALL DIMENSIONS APPLY 5. UNLESS OTHERWISE SPECIFIED	
DATE: 9/14/2017 SCALE: NTS WEIGHT: 0.0 LBS SHEET 1 OF 1	
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ECAJ 17-655